

What is claimed is:

1. A processing method of a silicon wafer to immerse a silicon wafer having degraded superficial layers gone through a cleaning process subsequent to a lapping process into acid etching solution containing phosphoric acid in acid aqueous water solution mainly composed of hydrofluoric acid and nitric acid, thereby etching said wafer.

2. The processing method according to claim 1, wherein, when the acid aqueous water solution mainly composed of hydrofluoric acid and nitric acid is made 100 percent by weight, said acid aqueous water solution contains phosphoric acid 30 to 40 percent by weight.

3. A processing method of a silicon wafer, including :

an etching process (13) storing acid etching solution and alkali etching solution in plural etching tanks, respectively, and immersing a silicon wafer having degraded superficial layers gone through a cleaning process (12) subsequent to a lapping process (11) into the acid etching solution and the alkali etching solution in order,

a front surface mirror-polishing process (18) to mirror-polish one surface of said etched wafer, and

a cleaning process (19) to clean said front surface mirror-polished wafer,

wherein said etching process (13) is a process in which the alkali etching is performed after the acid etching, and

wherein said acid etching solution contains phosphoric acid equal to or more than 30 percent by weight in the acid aqueous water solution 100 percent by weight mainly composed of hydrofluoric acid and nitric acid.

4. The processing method according to claim 3, further including a rear surface slight-polishing process (17) to polish a portion of the unevenness of the wafer rear surface formed by said etching process (13) between the etching process (13) and the front surface mirror-polishing process (18).

5. The processing method according to claim 3, wherein, when the acid aqueous water solution mainly composed of hydrofluoric acid and nitric acid is made 100 percent by weight, said acid aqueous water solution contains phosphoric acid 30 to 40 percent by weight.

6. The processing method according to claim 3, wherein the acid etching in the etching process (13) is performed by a spin-coating method, in which the acid etching solution is dripped on the silicon wafer, and said wafer is spun so that said dripped acid etching solution is expanded on the whole wafer surface.